

ABSTRACT OF THE DISCLOSURE

This invention includes methods of forming a phosphorus doped silicon dioxide comprising layers, and methods of forming trench isolation in the fabrication of integrated circuitry. In one implementation, a method of forming a phosphorus doped silicon dioxide comprising layer includes positioning a substrate within a deposition chamber. First and second vapor phase reactants are introduced in alternate and temporally separated pulses to the substrate within the chamber in a plurality of deposition cycles under conditions effective to deposit a phosphorus doped silicon dioxide comprising layer on the substrate. One of the first and second vapor phase reactants is $\text{PO}(\text{OR})_3$ where R is hydrocarbyl, and an other of the first and second vapor phase reactants is $\text{Si}(\text{OR})_3\text{OH}$ where R is hydrocarbyl.